1   Claims

2   What is claimed is:

3   (1) a machine for measuring angles about a plurality of axes, comprising:

4

5   one or more multi-axis tilt sensor(s)/accelerometer(s), or multiple tilt sensors

6   /accelerometers, situated about different axis; and

7

8   a computing device, for example, a microprocessor, that receives inputs from the said

9   tilt sensor(s)/accelerometer(s), translates them into expressions of angular

10.   measurement and outputs the results for display, computation, or extraction;

11

12   (1A) a machine for measuring angles about a plurality of axes, comprising:

13

14   one or more multi-axis tilt sensor(s)/accelerometer(s), or multiple tilt sensors

15   /accelerometers, situated about different axis; and

16

17   a computing device, for example, a microprocessor, that receives inputs from the said

18   tilt sensor(s)/accelerometer(s), translates them into expressions of angular

19   measurement, calculates compounded angles of the various angles it measures and

20   outputs the results for display, computation, or extraction;

21

22   (2) a machine as in claims (1) or (1A) wherein a means of information extraction is

23   incorporated, in example, a communications port or infra-red transmitter/receiver.

24

1   (3) a machine as in claim (1) or (1A) that displays the results of the measurements

2   and/or calculations in graphic form.

3

4   (3A) a machine as in claim (3) wherein multiple displays may be exhibited

5   simultaneously.

6

7   (3B) a machine as in claim (3) wherein multiple displays may be exhibited sequentially.

8

9   (3C) a machine as in claim (3) wherein multiple displays modes are controllable, being

10   user selectable to exhibit simultaneously or sequentially.

11

12   (3D) a machine as in claim (3) wherein one or more graphic displays resemble the form

13   of a bull's-eye bubble level.

14

15   (3E) a machine as in claim (3) wherein one or more graphic displays resemble the form

16   of a curved-tube bubble level.

17

18   (3F) a machine as in claim (3) wherein the displays appear on different faces of the

19   machine's case according to the axis about which the measurements or calculations

20   producing them are made.

21

22   (3G) a machine as in claim (3) that, having calculated a compound angle, can display a

23   line representing the edge of the plane in which that angle lies.

24

1   (4) a machine as in claim (1) or (1A) that displays the results of the measurements

2   and/or calculations in numeric form.

3

4   (4A) a machine as in claim (4) wherein multiple displays may be exhibited

5   simultaneously.

6

7   (4B) a machine as in claim (4) wherein multiple displays may be exhibited sequentially.

8

9   (4C) a machine as in claim (4) wherein multiple displays modes are controllable, being

10   user selectable to exhibit simultaneously or sequentially.

11

12   (4F) a machine as in claim (4) wherein the displays appear on different faces of the

13   machine's case according to the axis about which the measurements or calculations

14   producing them are made.

15

16   (4G) a machine as in claim (4) that, having calculated a compound angle, can display a

17   line representing the edge of the plane in which that angle lies.

18

19   (5) a machine as in claim (1) or (1A) wherein the display format is user controllable,

20   allowing selection of either graphic or numeric format.

21

22   (5A) a machine as in claim (5) wherein multiple displays may be exhibited

23   simultaneously.

24

(20) ~~(5B)~~ a machine as in claim (18) ~~(5)~~ wherein multiple displays may be exhibited sequentially.

(21) ~~(5C)~~ A machine as in claim (18) ~~(5)~~ wherein multiple displays modes are controllable, being user selectable to exhibit simultaneously or sequentially.

(22) ~~(5D)~~ a machine as in claim (18) ~~(5)~~ wherein one or more graphic displays resemble the form of a bull's-eye bubble level.

(23) ~~(5E)~~ a machine as in claim (18) ~~(5)~~ wherein one or more graphic displays resemble the form of a curved-tube bubble level.

(24) ~~(5F)~~ a machine as in claim (18) ~~(5)~~ wherein the displays appear on different faces of the machine's case according to the axis about which the measurements or calculations producing them are made.

(25) ~~(5G)~~ a machine as in claim (18) ~~(5)~~ that, having calculated a compound angle, can display a line representing the edge of the plane in which that angle lies.

(26) ~~(8)~~ a machine as in claims (1) or (2) ~~(1A)~~ wherein angles may be measured and/or calculated in multiple modes comprising various levels of precision and of speed of measurement and/or calculation.

(27) ~~(8A)~~ a machine as in claim (26) ~~(8)~~ wherein the modes of measurement and/or calculation may be selected automatically by the machine itself.

1 (8B) A machine as in claim (8) wherein the modes of measurement and/or calculation

2 may be manually selected by the user.

3

4 (9) a machine as in claims (1) or (1A) wherein one or more means of orienting the

5 device with respect to distant or remote reference points is incorporated, these means

6 being preferably by use of a laser light or other electromagnetic energy beam projected

7 from the device, but also including optical sight or reticule, audio beam, mechanical arm

8 or extension, or any other manner of remote reference.

9

10 (10) a machine as in claims (1) or (1A) wherein the measurements and results of

11 calculations may be recorded and later displayed or output for reference.

12

13 (11) a machine as in claims (1) or (1A) wherein the computing component, for example,

14 a micro-processor, can automatically select a display mode in accordance with the

15 orientation of the device as detected by the sensor module.

16

17 (12) a machine as in claim (1) or (1A) wherein the ambient temperature is measured

18 and displayed for calibration purposes.

19

20 (13) a machine as in claim (1) or (1A) wherein a discrete signal, for example, audio,

21 visual, or electrical, is emitted when the unit attains one or more pre-determined

22 angular position(s).

23

1   (14) a machine as in claim (1) or (1A) wherein an alarm signal is emitted that varies in

2   accordance with the machine's proximity to pre-determined angles;

3

4   (15) a machine as in claim (1) or (1A) also comprising a means of recording, or of

5   storing in a memory, a baseline or zero point for each axis from whence angles may be

6   measured;

7   (16) a machine as in claim (1) or (1A) wherein the functions of angular measurement

8   may be set to reset to zero at pre-determined or user selected angles, presenting, at

9   each applicable angle, a display such as would be exhibited by a conventional bubble

10 inclinometer in the level position.

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